US009265998B1

(12) **United States Patent**
Kammerer et al.

(10) **Patent No.: US 9,265,998 B1**
(45) **Date of Patent: *Feb. 23, 2016**

(54) **GOLF PUTTER WITH ADJUSTABLE COUNTERBALANCE WEIGHT**

(71) Applicant: **NIKE, Inc.**, Beaverton, OR (US)

(72) Inventors: **Brian Kammerer**, Ft. Worth, TX (US); **David N. Franklin**, Granbury, TX (US); **John Hatfield**, Granbury, TX (US)

(73) Assignee: **Nike, Inc.**, Beaverton, OR (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/628,846**

(22) Filed: **Feb. 23, 2015**

Related U.S. Application Data

(63) Continuation-in-part of application No. 14/493,397, filed on Sep. 23, 2014.

(51) **Int. Cl.**

A63B 53/16	(2006.01)
A63B 53/14	(2015.01)
A63B 53/00	(2015.01)

(52) **U.S. Cl.**
CPC ***A63B 53/145*** (2013.01); ***A63B 53/007*** (2013.01); ***A63B 53/16*** (2013.01)

(58) **Field of Classification Search**
CPC A63B 53/145; A63B 53/16; A63B 53/007
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,051,083	A	8/1936	Hart	
5,269,518	A	12/1993	Kobayashi et al.	
5,460,378	A	10/1995	Getts	
5,465,967	A	11/1995	Boeckenhaupt	
5,494,288	A	2/1996	Jimenez et al.	
5,554,078	A	9/1996	Hannon et al.	
5,632,691	A	5/1997	Hannon et al.	
5,699,632	A	12/1997	Stout et al.	
6,793,588	B2 *	9/2004	Tang et al.	473/242
7,699,718	B2 *	4/2010	Lindner	473/297
7,704,160	B2	4/2010	Lindner	
7,704,161	B2	4/2010	Lindner	
8,177,658	B1	5/2012	Johnson	
8,444,502	B2	5/2013	Karube	
8,641,551	B2	2/2014	Johnson	
2005/0054459	A1	3/2005	Oldenburg	
2006/0009303	A1 *	1/2006	Prince et al.	473/297
2010/0105498	A1	4/2010	Johnson	
2011/0269565	A1 *	11/2011	Karube	473/297
2013/0165249	A1 *	6/2013	Margoles et al.	473/297
2014/0221121	A1 *	8/2014	Margoles et al.	473/297

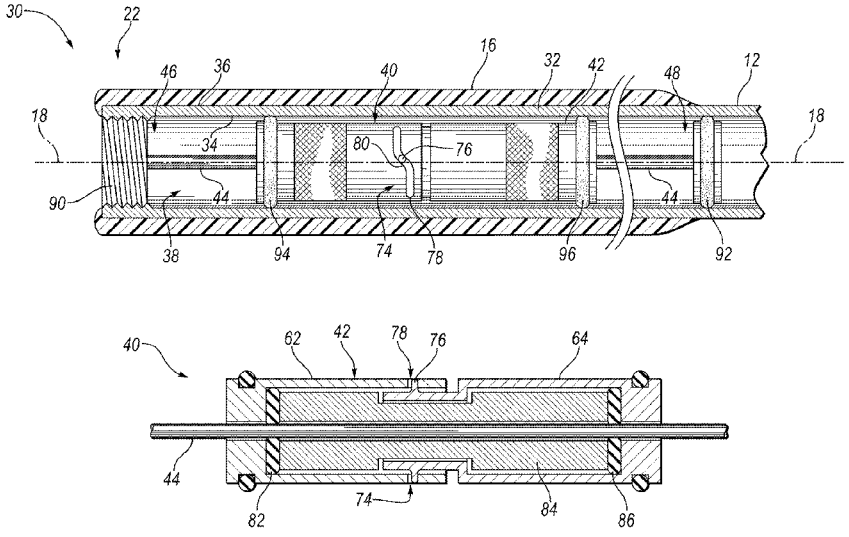
* cited by examiner

Primary Examiner — Stephen Blau
(74) *Attorney, Agent, or Firm* — Quinn Law Group, PLLC

(57) **ABSTRACT**

A golf club includes a tubular shaft, a golf club head affixed to a first end of the shaft, and a grip disposed about a second end of the shaft. The golf club head is a putter head having a loft angle of from about 0 degrees to about 6 degrees and a mass of from about 360 grams to about 400 grams. A movable weight is disposed within a hollow recess of the shaft and within a grip portion of the club. The movable weight is configured to be selectively repositionable within the grip portion by a user, and has a mass of from about 60 grams to about 80 grams.

17 Claims, 2 Drawing Sheets



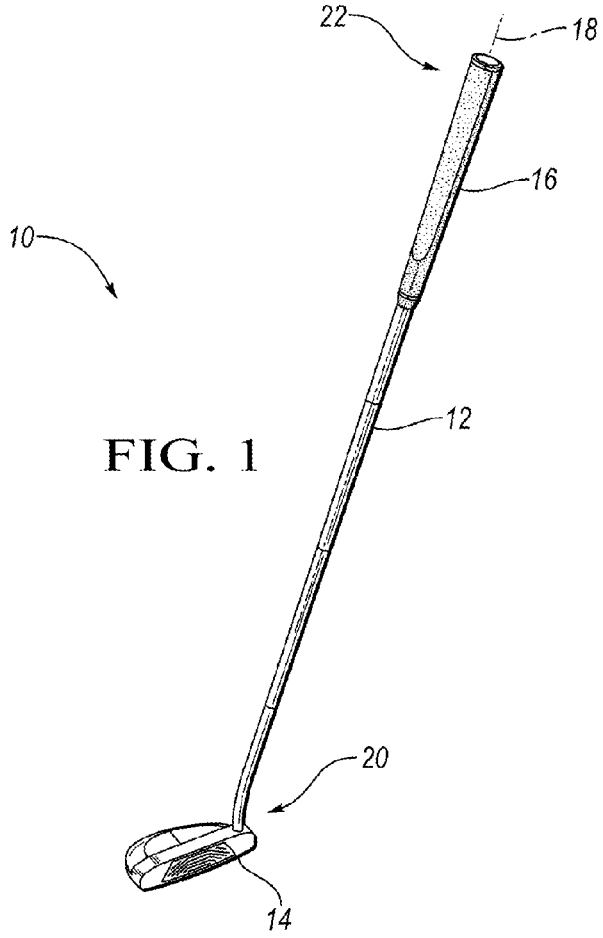


FIG. 1

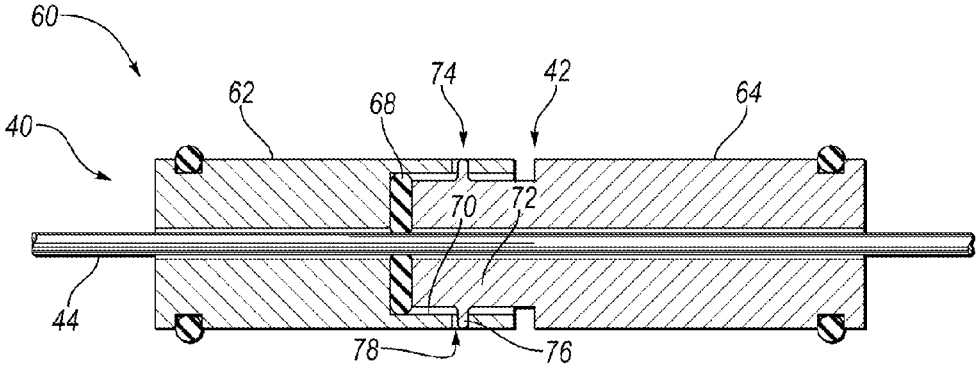


FIG. 3

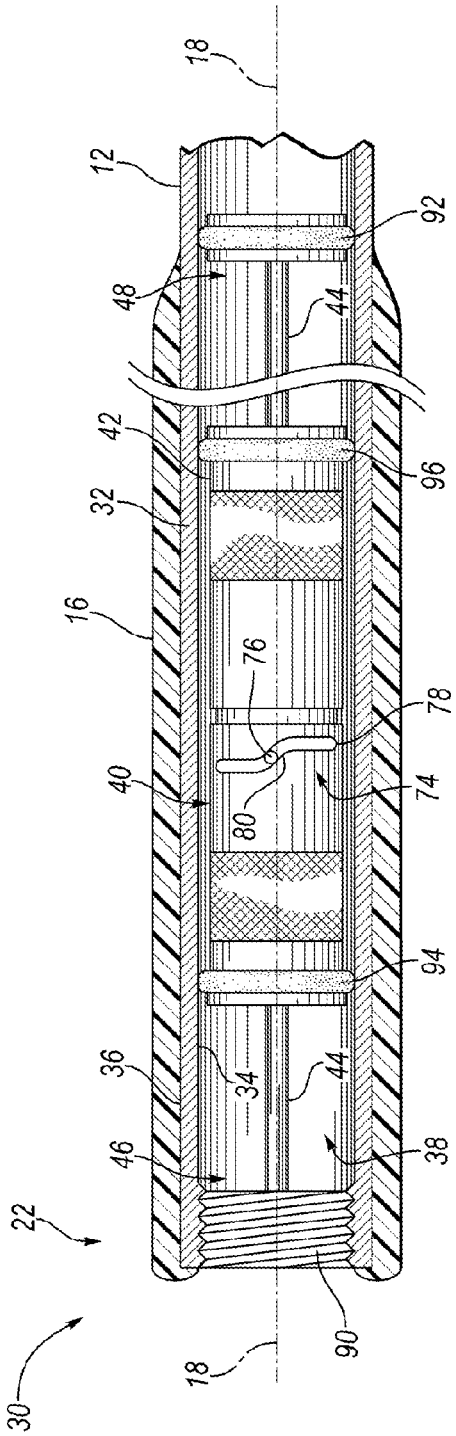

18
12
92
48
44
42
96
32
16
76
78
40
80
74
94
36
34
44
46
38
22
90
18
30

FIG. 2

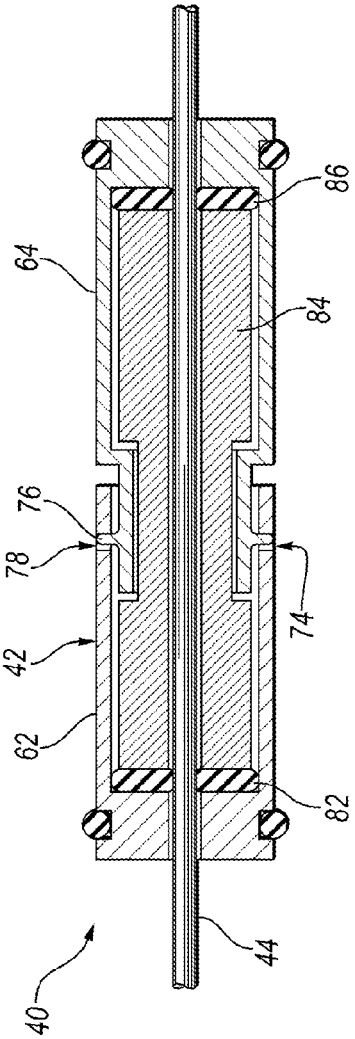

86
64
84
76
78
74
42
62
82
44
40

FIG. 4

GOLF PUTTER WITH ADJUSTABLE COUNTERBALANCE WEIGHT

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of and claims the benefit of priority from U.S. application Ser. No. 14/493,397, filed Sep. 23, 2014, which is hereby incorporated by reference in its entirety.

TECHNICAL FIELD

The present invention relates generally to a golf putter having an adjustable counterbalance weight.

BACKGROUND

Putting is one of the most precise aspects of the game of golf. It requires a considerable amount of consistency to properly align and strike a ball so that it rolls on an intended line for a desired distance. To facilitate a consistent stroke, many golfers look favorably on a putter that provides smooth stroke, good glide, pure impact, and a bounce-less topspin ball launch.

One strategy to remove uncertainty in a putting stroke has been to anchor an extended length putter into the midsection of the golfer. Doing so reduces the total number of degrees of freedom that must be successfully controlled to provide a smooth, substantially planar stroke. Such a practice has been prohibited by rules established by the USGA and R&A rule making bodies. As such, club manufacturers have taken on a renewed interest in the design of the putter to fill the void left by the prohibition on anchored-style putters.

SUMMARY

In an embodiment, a golf club includes a tubular shaft, a golf club head affixed to a first end of the shaft, and a grip disposed about a second end of the shaft. The golf club head is a putter head having a loft angle of from about 0 degrees to about 6 degrees and a mass of from about 360 grams to about 400 grams. A movable weight is disposed within a hollow recess of the shaft and within a grip portion of the club. The movable weight is configured to be selectively repositionable within the grip portion by a user, and has a mass of from about 60 grams to about 80 grams.

In an embodiment, a golf club includes a tubular shaft extending between a first end and a second end, the tubular shaft having an inner surface that defines a hollow recess and a length of from about 35 inches to about 38 inches. A golf club head is affixed to the first end of the tubular shaft, where the golf club head has a loft angle of from about 0 degrees to about 6 degrees and a mass of from about 360 grams to about 390 grams. A movable weight is disposed within the hollow recess and is selectively repositionable throughout a translatable range of from about 250 mm to about 400 extending from the second end of the tubular shaft The movable weight has a mass of from about 60 grams to about 80 grams.

The above features and advantages and other features and advantages of the present invention are readily apparent from the following detailed description of the best modes for carrying out the invention when taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic side view of a golf club, such as a putter.

FIG. **2** is a schematic partial cross-sectional side view of a putter having an adjustable counterbalance disposed within a hollow recess of a shaft of a golf club.

FIG. **3** is a schematic cross-sectional side vice of an embodiment of an annular weight portion of an adjustable counterbalance for a golf club.

FIG. **4** is a schematic cross-sectional side vice of an embodiment of an annular weight portion of an adjustable counterbalance for a golf club.

DETAILED DESCRIPTION

Referring to the drawings, wherein like reference numerals are used to identify like or identical components in the various views, FIG. **1** schematically illustrates a golf club **10** that includes a shaft **12**, a golf club head **14**, and a grip **16**. The shaft **12** is generally disposed along a longitudinal axis **18** and extends between a first end **20** and a second end **22**. The golf club head **14** is affixed to the first end **20** of the shaft **12**, and the grip **16** is circumferentially disposed about the outside of the shaft **12** such that the grip **16** abuts the second end **22**. The total length of the golf club **10** may be from about 30 inches to about 50 inches, or from about 34 inches to about 40 inches, or even from about 35 inches to about 38 inches. In general, the grip **16** may be a non-metallic wrap or sleeve that is gripped by a user when swinging the club. Suitable materials for the grip typically include a rubber, leather, or synthetic leather material. The grip **16** may have a length of, for example, about 15 inches, extending from the second end **22** of the shaft **12**. In one configuration, the golf club head **14** is a putter head that has a loft angle of from about 0 degrees to about 6 degrees, and a head mass of from about 300 g to about 500. In other embodiments, the club head **14** may have a head mass of from about 325 g to about 425 g, or from about 360 g to about 400 g, or from about 360 g to about 390 g, or even from about 365 g to about 375 g. In one particular example, the head mass may be about 368 g to about 372 g.

FIG. **2** schematically illustrates a partial cross-sectional view **30** of the shaft **12** of FIG. **1**. As shown, the shaft **12** includes a tubular body **32** having an inner surface **34** and an outer surface **36** that are substantially concentric and aligned with the longitudinal axis **18**. The grip **16** is disposed about the outer surface **36**, and the inner surface **34** defines a hollow recess **38**. An adjustable counterbalance **40** may be disposed within the hollow recess **38**, and may enable a movable weight **42** to be selectively repositioned by a user at an intended location within the shaft **12**. By repositioning the movable weight **42** within the shaft **12**, the user may alter the feel and response of the club **10** when it is swung. For certain placements and sizes of the movable weight **42**, the feel or swing profile of the club **10** may be similar to that of an anchored putter. While the anchored putter feel is highly golfer-specific, it has been found that the combination of longer shaft lengths (e.g., about 35 inches to about 38 inches) and heavier putter heads (e.g., about 360 g to about 400 g, or more preferably about 360 g to about 390 g) suitably mimic the anchored feel when combined with the movable weight **42** described herein.

As shown in FIG. **2**, the adjustable counterbalance **40** includes an elongate member **44** that is configured to be substantially aligned with the longitudinal axis **18** of the shaft **12**. The elongate member **44** may include a rod formed from a suitably light weight, yet resilient material, such as, for example, an aluminum, a carbon fiber-wrapped aluminum, and/or a polymeric material. Examples of suitable polymers may include one or more polyamides, polyimides, polyamide-imides, polyetheretherketones (PEEK), polycarbon-

ates, engineering polyurethanes, and/or other similar materials. In general, the polymeric material may be a either thermoplastic or thermoset, and may be unfilled, filled with a chopped fiber such as a glass fiber or a carbon fiber, or may have other suitable fillers and/or additives to promote increased strength. The rod may have a diameter that is from about 10% to about 25% of the diameter of the hollow recess **38**. Likewise, the rod may have a length of from about 300 mm to about 450 mm, or from about 350 mm to about 400 mm. In one particular example, the rod may have a length of about 15 inches or about 380 mm.

In one configuration, the movable weight **42** may be generally annular in nature and may radially surround the elongate member **44**. The weight **42** may be selectively affixed to the elongate member **44** to facilitate a semi-permanent placement of the weight **42**. For example, the weight **42** may be transitionable between a first, unlocked state and a second, locked state at the urging of the user. When configured in a first, unlocked state, the annular weight **42** may be translatable throughout a translatable range (e.g., between a first end **46** and a second end **48** of the elongate member **44**). Once the annular weight **42** is suitably positioned by a user, the weight **42** may be transitioned into a second, locked state, where it is then restrained from further translation.

FIG. **3** schematically illustrates a partial cross-sectional view **60** of an embodiment of an annular weight **42** that is configured to be selectively translatable along the elongate member **44**. As shown, the annular weight **42** may include a first section **62** and a second section **64** that each circumferentially surround the elongate member **44** and are adjacent to each other along the length of the member **44**.

In one embodiment, the annular weight **42** shown in FIG. **3** may selectively transition between the first, locked state and the second, unlocked state by rotating the first section **62** relative to the second section **64** about the elongate member **44**. In one configuration, the transition may be completed through a relative rotation of from about 45 degrees to about 180 degrees. In another configuration, the transition may be completed through a relative rotation of from about 80 degrees to about 100 degrees, or approximately a quarter of a turn. In one embodiment, this relative rotation may draw the respective sections **62**, **64** toward each other to apply an axially compressive force to a grommet **68** located between the two sections **62**, **64**. The applied compressive force causes the grommet **68** to radially expand against the elongate member **44** with a sufficient contact force to inhibit the annular weight **42** from freely translating along the elongate member **44** (i.e., selectively affixing the annular weight **42** to the elongate member **44**). The grommet **68** may be formed from a polymeric material and may have a hardness, measured on the Shore A scale, of from about 40A to about 80A.

In one configuration, the relative rotation used to secure the weight **42** in place may be effectuated through an applied torque that is low enough to perform by hand. For example, in one configuration, the maximum required torque that is needed to lock the weight **42** in-place may be less than about 2.5 inch-pounds. To aid in the manual rotation, in one configuration, the outer surface of a portion of each section **62**, **64** may be knurled or otherwise textured.

In one particular design, such as shown in FIG. **3**, the first section **62** may define a recess **70** that is configured to receive, and radially surround a portion **72** of the second section **64**. An annular grommet **68** may be disposed within the recess **70** such that it is radially positioned between the elongate member **44** and a portion of the first section **62**. The nested portion **72** of the second section **64** may be drawn into or out of the recess **70** at the urging of a locking interface **74**.

The locking interface **74** may include, for example, threaded portions of the first and second sections **62**, **64** that cooperate to cause a relative translation of the sections **62**, **64**. In another embodiment, such as shown in FIG. **3**, the locking interface **74** may include a protrusion **76** and a ramped slot **78** or track, similar to a BNC-style coaxial wire connector. The protrusion may extend in a radial direction from one of the first and second sections **62**, **64**, and the slot **78** or track may be defined by the other. The slot **78** may extend around a portion of the circumference of the annular weight **42**, and may include a length **80** that is ramped in an axial direction. The protrusion **76** may be captured within the slot **78**, and a relative rotation of the first and second sections **62**, **64** would result in a relative translation of the sections **62**, **64** (particularly as the protrusion **76** moves through the ramped length **80** of the slot **78**). In one embodiment, the slot **78** may be provided in the first section **62**, and the protrusion **76** may extend radially outward from the nested portion **72** of the second section **64**.

In another design, the annular weight **42** may include two or more annular grommets **68** that are operative to selectively restrain translation of the weight **42** along the elongate member **44**. For example, as shown in FIG. **4**, the annular weight may include a first annular grommet **82** disposed between the first section **62** and a weight tube **84**, and may include a second annular grommet **86** disposed between the second section **64** and the weight tube **84**. The first and second sections **62**, **64** may meet at a similar locking interface **74** as described above, though transitioning from an unlocked state to a locked state may involve compressing each of the first and second grommets **82**, **86** against the weight tube **84**. The compressive force may cause the first annular grommet **82** to expand between the elongate member **44** and the first section **62** and may cause the second annular grommet **86** to expand between the elongate member **44** and the second section **64**. In still further designs, the weight tube **84** may be subdivided with additional annular grommets disposed at intermediate locations between sections of the weight tube.

Referring again to FIG. **2**, the adjustable counterbalance **40** is configured to be selectively secured to the second end **18** of the shaft **12**. In one configuration, the adjustable counterbalance **40** includes a securing means coupled with the elongate member **44** at, or proximate to, the first end **46** of the member **44**. The securing means may be configured to selectively couple the adjustable counterbalance **40** to the second end **18** of the shaft **12**. In one configuration, the securing means is an externally threaded cap **90** that is affixed to the first end **46** of the elongate member **44**. The externally threaded cap **90** is configured to cooperate with a threaded portion of the inner surface **34** of the shaft **12** to secure the cap **90** within the hollow recess **38**. In other configurations, the securing means may be a press-fit style connection, or may include an internally threaded, lid-style cap that may screw onto a portion of the end of the shaft **12**.

A stabilizing grommet **92** may be disposed on the second end **48** of the elongate member **44**, and may be used to stabilize the elongate member **44** within the hollow recess **38**. This stabilizing grommet **92** has an external diameter that is dimensioned so that when the grommet **92** is inserted within the tubular body of the golf club shaft, it may apply a contact force against the inner surface **34** of the shaft **12**. Additionally, one or more stabilizing grommets **92** may be disposed on the annular weight **42** for a similar, stabilizing purpose. For example, as shown in FIG. **2**, in one configuration, a first stabilizing grommet **94** may be disposed around the first section **62** and a second stabilizing grommet **96** may be disposed around the second section **64**. Each stabilizing grom-

met **94**, **96** may be compressed between the respective section **62**, **64** and the inner surface **34** of the shaft when the adjustable counterbalance **30** is inserted within the hollow recess **38**.

In one configuration, an adjustable counterbalance **30** for a putter, may enable a mass of from about 30 g to about 100 g to be movable within a hollow recess **38** of the shaft **12** throughout a translatable range of from about 200 mm to about 500 mm. Said another way, in this embodiment, the movable weight **42** may have a mass (i.e. a "movable mass") of from about 30 g to about 100 g, where the center of mass for the movable weight **42** is translatable along the elongate member **44** (and securable thereto) throughout a range of from about 200 mm to about 500 mm. In other configurations, the adjustable counterbalance **30** may enable a mass of from about 60 g to about 80 g to be movable within the hollow recess **38** throughout a range of from about 250 mm to about 400 mm. In one particular example, the adjustable counterbalance **30** may enable a mass of about 65 g to about 75 g to be movable within the hollow recess **38** throughout a range of about 250 to about 350 mm. In one configuration, the translatable range may extend from the second end **22** of the shaft **12** toward the first end **20**. In this manner, all or most of the translatable range may be coincident with the grip **16**.

The entire mass of the adjustable counterbalance **40** may be from about 50 g to about 120 g, which includes from about 30 g to about 100 g of movable mass, and about 20 g of fixed mass (i.e., mass of the elongate member **44** and other stationary components). In one configuration, the grip **16** may define a "grip portion" of the club. More specifically, the grip portion includes the entire portion of the golf club that is coincident with the grip **16**. As noted above, the movable weight **42** may be selectively repositionable within the grip portion to provide the feel of an anchored putter. The grip portion may have a total fixed mass (i.e., the mass of the non-repositionable elements) that is from about 60 g to about 120 g. In another embodiment, the total fixed mass of the grip portion is from about 80 g to about 100. In one particular embodiment, the total fixed mass of the grip portion may be about 90 g.

To provide the most optimal feel and adjustability to a golfer, the amount of the movable mass may fall within certain proportions, such as expressed by the ratio of movable mass to head mass and/or to the fixed mass within the grip portion. In one configuration, the ratio of the head mass to the movable mass may be from about 3:1 to about 11:1, or from about 3:1 to about 8:1, or even from about 4:1 to about 6:1. In a particular example, the ratio of the head mass to the movable mass may be about 4.5:1 to about 5.5:1. Likewise, the ratio of the fixed grip mass to the movable mass may be from about 0.5:1 to about 4:1, or from about 0.5:1 to about 2:1, or even from about 0.75:1 to about 2.0:1. In a particular example, the ratio of the fixed grip mass to the movable mass may be about 1.2:1.

In one configuration, the elongate member **44** may be color coded, or may have other suitable visual markings, that may allow a user to quickly identify specific regions or weight configurations that may be desirable. For example, in one embodiment, there may be at least three colored regions along the length of the elongate member **44**. These may correspond to high, mid, and low weight configurations.

While various embodiments have been described, the description is intended to be exemplary, rather than limiting and it will be apparent to those of ordinary skill in the art that many more embodiments and implementations are possible. Accordingly, the invention is not to be restricted except in light of the attached claims and their equivalents. Also, various modifications and changes may be made within the scope of the attached claims.

"A," "an," "the," "at least one," and "one or more" are used interchangeably to indicate that at least one of the item is present; a plurality of such items may be present unless the context clearly indicates otherwise. All numerical values of parameters (e.g., of quantities or conditions) in this specification, including the appended claims, are to be understood as being modified in all instances by the term "about" whether or not "about" actually appears before the numerical value. "About" indicates that the stated numerical value allows some slight imprecision (with some approach to exactness in the value; about or reasonably close to the value; nearly). If the imprecision provided by "about" is not otherwise understood in the art with this ordinary meaning, then "about" as used herein indicates at least variations that may arise from ordinary methods of measuring and using such parameters. In addition, disclosure of ranges includes disclosure of all values and further divided ranges within the entire range. Each value within a range and the endpoints of a range are hereby all disclosed as separate embodiment. The terms "comprises," "comprising," "including," and "having," are inclusive and therefore specify the presence of stated items, but do not preclude the presence of other items. As used in this specification, the term "or" includes any and all combinations of one or more of the listed items. When the terms first, second, third, etc. are used to differentiate various items from each other, these designations are merely for convenience and do not limit the items.

The invention claimed is:

1. A golf club comprising:

a tubular shaft extending between a first end and a second end, the tubular shaft having an inner surface that defines a hollow recess and a length of from about 35 inches to about 38 inches;

a golf club head affixed to the first end of the tubular shaft, the golf club head having a loft angle of from about 0 degrees to about 6 degrees and a mass of from about 360 grams to about 390 grams;

an adjustable counterbalance configured to be inserted into the hollow recess and secured to the second end of the shaft, the adjustable counterbalance including:

an elongate member including a rod;

a movable weight circumferentially disposed about the rod and including a first section and a second section, wherein the movable weight is configured to be selectively affixed to the elongate member by rotating the first section relative to the second section, and such that the rotating defines an axis of rotation that is coincident with a longitudinal axis of the rod;

wherein the entire movable weight is selectively repositionable throughout a translatable range having a length of from about 250 mm to about 400 mm along the rod, wherein the translatable range extends from the second end of the tubular shaft toward the first end when the adjustable counterbalance is secured to the second end; and

wherein the movable weight has a mass of from about 60 grams to about 80 grams.

2. The golf club of claim **1**, further comprising a grip disposed about the tubular shaft and abutting the second end, wherein the grip defines a grip portion of the golf club; and

wherein the grip portion has a fixed mass, and the ratio of the fixed mass to the mass of the movable weight is from about 0.75:1 to about 2.0:1.

3. The golf club of claim 2, wherein the grip has a length of about 15 inches.

4. A golf club comprising:

a tubular shaft extending between a first end and a second end, the tubular shaft having an inner surface that defines a hollow recess;

a golf club head affixed to the first end of the tubular shaft;

an adjustable counterbalance configured to be inserted into the hollow recess and secured to the second end of the shaft, the adjustable counterbalance including:

an elongate member including a rod;

a movable weight circumferentially disposed about the rod and including a first section and a second section, wherein the movable weight is transitionable between a first, unlocked state, and a second, locked state by rotating the first section relative to the second section, and such that the rotating defines an axis of rotation that is coincident with a longitudinal axis of the rod;

wherein the entire movable weight is freely slidable along the rod when in the unlocked state; and

wherein the movable weight is restrained from translation along the elongate member when in the locked state.

5. The golf club of claim 4, wherein the movable weight is freely slidable within a translatable range when in the unlocked state, and wherein the translatable range has a length of from about 250 mm to about 400 mm and extends from the second end of the tubular shaft toward the first end when the adjustable counterbalance is secured to the second end.

6. The golf club of claim 4, wherein the movable weight has a mass of from about 60 g to about 80 g.

7. The golf club of claim 4, wherein the golf club head has a mass of from about 360 grams to about 400 grams.

8. The golf club of claim 4, further comprising a grip disposed about the tubular shaft and abutting the second end of the tubular shaft, wherein the grip defines a grip portion of the golf club; and

wherein the grip portion has a fixed mass; and wherein a ratio of the fixed mass to the mass of the movable weight is from about 0.75:1 to about 2.0:1.

9. The golf club of claim 8, wherein the grip has a length of about 15 inches, and wherein the tubular shaft has a length of from about 34 inches to about 40 inches.

10. The golf club of claim 4, wherein the golf club head is a putter head.

11. The golf club of claim 4, wherein the movable weight is transitionable between a first, unlocked state, and a second, locked state by rotating the first section relative to the second section through a relative rotation of from about 80 degrees to about 100 degrees.

12. The golf club of claim 4, wherein the movable weight includes a grommet formed from a polymeric material, and wherein the grommet applies a compressive force against the elongate member when the movable weight is in the second, locked state.

13. The golf club of claim 4, wherein the elongate member further includes means to secure the adjustable counterbalance to the second end of the shaft.

14. The golf club of claim 4, wherein the movable weight is freely slidable within a translatable range when in the unlocked state, and wherein the translatable range has a length of from about 200 mm to about 500 mm and extends from the second end of the tubular shaft toward the first end when the adjustable counterbalance is secured to the second end;

wherein the movable weight has a mass of from about 30 g to about 100;

wherein the golf club head has a mass of from about 300 grams to about 500 grams; and

wherein the tubular shaft has a length of from about 30 inches to about 50 inches.

15. The golf club of claim 14, wherein the length of the translatable range is from about 250 mm to about 400 mm;

wherein the mass of the movable weight is from about 60 g to about 80 g;

wherein the mass of the golf club head is from about 360 grams to about 400 grams; and

wherein the length of the tubular shaft is from about 34 inches to about 40 inches.

16. The golf club of claim 15, wherein the golf club head is a putter head.

17. The golf club of claim 15, further comprising a grip disposed about the tubular shaft and abutting the second end of the tubular shaft, wherein the grip defines a grip portion of the golf club; and

wherein the grip portion has a fixed mass; and wherein a ratio of the fixed mass to the mass of the movable weight is from about 0.75:1 to about 2.0:1.

* * * * *